BELASH, F.N.; GONTARENKO, P.A.; LOZOVAYA, L.V.; STREL'TSYN, G.S.;
DOLZHENKOVA, A.N.

V.I.Klassen's and Mao Chi-fan's article "Mechanism of the effect of water glass in the flotation of nonsulfide minerals." F.N.Belash and others. TSvet.met. 33 no.5:74-75 My '60.
(MIRA 13:7)

(Flotation) (Klassen, V.I.)
(Mao Chi-fan') (Belash, F.N.)

BELASH, F.N., prof.; KHARLAMOV, V.S., kand. tekhn.nauk
KIRNOSOV, E.G., inzh.

Middlings of the Kamsh-burun factory as a subject for gravity concentration. Izv. vys. ucheb. zav.; gor. zhur. no.4:146-151 '61. (MIRA 14:6)

1. Rekomendovana kafedroy obogashcheniya poleznykh iskopayemykh Krivorozhskogo gornorudnogo instituta. 2. Krivorozhskiy gornorudnyy institut (for Belash, Kharlamov, Kirnosov).
3. Kamyshburunskiy zhelezorudnyy kombinat (for Burova).
(Kerch Peninsula--Ore dressing)

BELASH, F.N. [Bielash, F.N.]; GONTARENKO, P.A. [Hontarenko, P.A.]

Use of a combined depressant of wast rock minerals in the flotation of iron ores. Dop.AN URSR no.5:640-643 '61. (MIRA 14:6)

1. Krivorgoskiy gornorudnyy institut. Predstavleno akademikom AN USSR A.N. Shcherbanem [Shcherban', O.N.].
(Flotation)

BELASH, F.N.; ANDREYEVA, A.I.

Effect of oxidizers and the oxygen in the air on the flotation of hematite and magnetite. Gor. zhur. no. 6:66 Je '61. (MIRA 14:6)

1. Krivorozhskiy gornorudnyy institut.
(Iron ores) (Flotation)

BELASH, Foka Nikiforovich, prof., doktor tekhn. nauk; VERIGO, K.N.,
otv. red.; KACHALKINA, Z.I., red. izd-va; IL'INSKAYA, G.M.,
tekhn. red.

[Flotation of iron ores]Flotatsiia zheleznykh rud. Moskva,
Gosgortekhizdat, 1962. 210 p. (MIRA 15:11)
(Flotation) (Iron ores)

BELASH, F.N.; KOVAL'CHUK, Kh.U.; LARIN, A.Ya.; PUGINA, O.V.

Using alkyl aryl sulfonate in the flotation of iron oxide. Biul.tekh.-ekon.inform.Gos.nauch.-issl.inst.nauch. i tekh.inform. no.6:3-5 '62. (MIRA 15:7)
(Flotation) (Iron oxides) (Sulfonic acids)

BELASH, F.N., prof.; PUGINA, O.V.; GETMANOVSKIY, I.K.

Flotation of iron oxides using a mixture of nonsulfonated compounds and tall oil. Gor. zhur. no.6:71-72 Je '62. (MIRA 15:11)

1. Krivorozhskiy gornorudnyy institut (for Belash, Pugina).
2. Shchebekinskiy nauchno-issledovatel'skiy institut sinteticheskikh zhirov i moyushchikh sredstv (for Getmanovskiy).

(Flotation) (Iron oxides)

BELASH, F.N., prof., doktor tekhn. nauk; GONTARENKO, P.A., aspirant

Flotation of iron ores from the Ingulets Mining and Ore Dressing Combine. Sbor. nauch. trud. KGRI no.13:168-176 '62. (MIRA 16:8)

(Ingulets region—Iron ores)
(Flotation)

BELASH, F.N.; ANDREYEVA, A.I.

Interaction of martite and magnetite with sodium oleate at various pH. Dokl.AN SSSR 145 no.3:615-616 Jl '62. (MIRA 15:7)

1. Krivorozhskiy gornorudnyy institut. Predstavleno akademikom S.I.Vol'fkovichem.
(Martite) (Magnetite) (Sodium oleate)

BELASH, F. N.; GONTARENKO, P. A.

Flotation of ores of the Krivoy Rog Northern Mining and Ore Dressing Combine. Gor. zhur. no.10:62-64 O '62. (MIRA 15:10)

1. Krivorozhskiy gornorudnyy institut.

(Krivoy Rog Basin--Iron ores)
(Flotation)

BELASH, F.N., prof., doktor tekhn. nauk; GAMILOV, M.A.

Flotation of perovskite in weakly acidic media. Sbor. nauch. trud. KGRI no.13:156-168 '62. (MIRA 16:8)

(Perovskite) (Flotation)

BELASH, F.N.; KAMENEV, P.Ya.; FAYNSHTEIN, E.G.; KHARLAMOV, V.S.;
ZAYTSEV, I.F.

Radiometric dressing of pieces of iron ore. Sbor. nauch. trud. KGRI no.13:208-211 '62. (MIRA 16:8)

1. Krivorozhskiy gornorudnyy institut (for Kharlamov).
2. Ukrainskiy proyektno-konstruktorskiy i nauchno-issledovatel'skiy institut po obogashcheniyu i briketirovaniyu ugley (for Zaytsev).

(Iron ores) (Ore dressing)
(Radioisotopes—Industrial applications)

BELASH, F.N., doktor tekhn. nauk, prof.; PUGINA, O.V., starshiy
nauchnyy sotrudnik; Prinimali uchastiye: YAKOVLEVA, V.F.,
laborant; KUKOVITSKAYA, S.G., laborant

Flotation of magnetic separation tailings of ferruginous quartzites from the Krivoy Rog Southern Mining and Ore Dressing Combine. Sbor. nauch. trud. KGRI no.13:176-187 '62.
(MIRA 16:8)

(Flotation) (Krivoy Rog Basin—Iron ores)

BELASH, F.N., prof., doktor tekhn. nauk; PUGINA, O.V., starshiy nauchnyy sotrudnik; RYBAKOVA, A.N., inzh.

Flotation of pulp from the ore dressing plant of the 40th Anniversary of the October Revolution Mining Administration of the Nikopol' Manganese Trust. Sbor. nauch. trud. KGRI no.13:187-204 '62. (MIRA 16:8)

(Nikopol' region—Manganese ores)
(Flotation)

BELASH, F.N., prof., doktor tekhn.nauk; PUGINA, O.V., gornyy inzh.

Efficient method of obtaining high-grade iron concentrates in Krivoy Rog Mining and Ore Dressing Combines. Gor.zhur. no.2:61-63 F '63. (MIRA 16:2)

1. Krivorozhskiy gornorudnyy institut.
(Krivoy Rog Basin—Iron ores) (Ore dressing)

BELASH, F.N., prof.; KOVAL'CHUK, Kh.U., inzh.

Effect of the density of the iron-ore pulp, in mixing it with reagents, on the flotation indices. Izv. vys. ucheb. zav.; gor. zhur. 6 no.3:184-189 '63. (MIRA 16:10)

1. Krivorozhskiy gornorudnyy institut. Rekomendovana kafedroy obogashcheniya.

BELAVIN, N.B.; KLENINA, Ye.K.; SHAKHMATOV, V.G.

Study of new corrosion-resistant alloys for dental prosthesis.
Med. prom. 17.no.4:51-54 Ap '63. (MIRA 16:7)

1. Nauchno-issledovatel'skiy institut eksperimental'noy khirurgicheskoy apparatury i instrumentov.
(DENTAL PROSTHESIS) (CORROSION--RESISTANT MATERIALS)

BELASH, F.N., prof., doktor tekhn. nauk

Basic trends and prospects for the flotation of Krivoy Rog iron quartzites and commercial-grade ores. Sbor. nauch. trud. KGRI no.17:3-23 '63. (MIRA 17:1)

BELASH, F.N., prof., doktor tekhn. nauk; PUGINA, O.V., starshiy nauchnyy sotrudnik

Using additives of surface active agents in tall oil for the flotation of iron oxides in a weakly acid medium. Sbor. nauch. trud. KGRI no.17:24-39 '63.

Flotation of iron minerals in tailings of the magnetic separation of iron quartzites from the open pit mine of the New Krivoy Rog Mining and Ore Dressing Combine. Ibid.:62-76
(MIRA 17:1)

BELASH, F.N., prof., doktor tekhn. nauk; KOVAL'CHUK, Kh.U., inzh.; [redacted] PUGINA, O.V., starshiy nauchnyy sotrudnik

Flotation of oxidized ores and tailings from the magnetic separation of semioxidized ores of the Central Mining and Ore Dressing Combine. Sbor. nauch. trud. KGRI no.17:51-62 '63. (MIRA 17:1)

BELASH, F.N., prof., doktor tekhn. nauk; PUGINA, O.V., starshiy nauchnyy sotrudnik; KONASHKOVA, S.V., inzh.

Recovering iron oxides from the tailings of the magnetic separation of Kursk Magnetic Anomaly iron quartzites at the Gubkin and Yuzhno-Korobkovskoye plants. Sbor. nauch. trud. KGRI no.17:107-122 '63. (MIRA 17:1)

BELASH, F.N., prof., doktor tekhn. nauk; ANDREYEVA, A.I., kand. tekhn. nauk

Dressing iron ores from the Mikhaylovka deposit in the Kursk Magnetic Anomaly. Sbor. nauch. trud. KGRI no.17:127-136 '63.

Interaction between martite and magnetite with sodium oleate. Ibid.:145-149 (MIRA 17:1)

BELASH, F.N., prof., doktor tekhn. nauk; PUGINA, O.V., starshiy nauchnyy sotrudnik; TRENTOVSKIY, G.F., inzh.; ARTEMOVA, A.A., inzh.; PRITSKO, T.N., inzh.

Pilot plant testing of the flotation of tailings from the magnetic separation of iron quartzites at the Southern Mining and Ore Dressing Combine. Sbor. nauch. trud. KGRI no.17:39-51 '63. (MIRA 17:1)

1. Yuzhnyy gornoobogatitel'nyy kombinat.

BELASH, F.N., doktor tekhn.nauk, prof.; GONTARENKO, P.A., aspirant

Activation of magnetite in soap flotation. Sbor.nauch.trud. KGRI no. 21:235-239 '63. (MIRA 17:7)

BELASH, F.N., doktor tekhn.nauk, prof.; ANTONOVA, N.F., mladshiy
nauchnyy sotrudnik

Using activated silicate for regulating the structure of pulp in the flotation of iron ore. Sbor.nauch.trud. KGRI no. 21:239-246 '63. (MIRA 17:7)

BELASH, F.N., prof., doktor tekhn. nauk

Theory and practice of the flotation of minerals in weakly acid media. Sbor. nauch. trud. KGRI no.11:281-322 '61
(MIRA 17:3)

Status of the introduction of flotation of iron oxides in the Krivoy Rog Basin. Ibid.:323-341

BELASH, P.N., doktor tekhn. nauk; GONTARENKO, P.A., inzh.

Iron ore dressing at the Northern Mining and Ore Dressing Combine using magnetic separation and flotation. Met. i gornorud. prom. no.6:52-55 N-D '62. (MIRA 17:8)

1. Krivorozhskiy gornorudnyy institut.

BELASH, F.N.; KOVAL'CHUK, Kh.U.; PUGINA, O.V.

Secondary recovery of iron from tailings of the Krivoy Rog ore dressing plants. Gor. zhur. no.11:57-61 N '63.

(MIRA 17:6)

1. Krivorozhskiy gornorudnyy institut.

~~BELASH, F.N.,~~ prof.; KOVAL'CHUK, Kh.U., inzh.

Effect of the mixing of pulps with reagents on the flotation of iron oxides. Izv.vys.ucheb.zav.;gor.zhur. 7 no.6:134-135 '64.
(MIRA 17:12)

1. Krivorozhskiy gornorudnyy institut. Rekomendovana kafedroy obogashcheniya poleznykh iskopayemykh.

BELASH, F.N., prof.; PUGINA, O.V.

Desliming the pulp in the flotation of iron ore. Obog. rud 9 no.4:3-5 '64. (MIRA 18:5)

BELASH, F.N.; CHUMAKOV, V.A.

Floatability of iron oxides from a pulp treated in a magnetic field. Gor. zhur. no.5:63-65 My '65. (MIRA 18:5)

1. Krivorozhskiy gornorudnyy institut (for Belash). 2. Inguletskiy gornoobogatitel'nyy kombinat (for Chumakov).

BELASH, F.N., doktor tekhn. nauk; PUGINA, O.V.; CHUMAKOV, V.A.

Effect of the magnetic treatment of pulp on flotation.
Met. i gornorud. prom. no.3:65-67 My-Je '65.
(MIRA 18:11)

SAVIN, Guriy Nikolayevich, akademik; PUTYATA, Tat'yana Vasil'yevna
FRADLIN, Boris Naumovich; BELASH, I.K., red.; GILELAKH,
V.I., red.

[Essays on the development of some basic problems in mechanics] Ocherki razvitiia nekotorykh fundamental'nykh problem mekhaniki. Kiev, Naukova dumka, 1964. 375 p.
(MIRA 17:12)

1. Akademiya nauk Ukr.SSR (for Savin).

BELASH, Leonid Fedorovich; RABINOVICH, M.G., red.

[Trachoma] Trakhoma. Moskva, Meditsina, 1964. 15 p.
(MIRA 17:8)

BELASH, M. P.

Elektricheskiye modeli dlya priblizhennogo resheniya integral'nykh i differentsial'nykh uravneniy. zh. Elektrichestvo, 11 (1945), 23-25.

SO: Mathematics in the USSR, 1917-1947
edited by Kurosh, A.G.,
Markushevich, A.I.,
Rashevskiy, P.K.
Moscow-Leningrad, 1948

BELASH, M.Ye.; PESHNIKOV, Ye.A.

Regimes for boring blastholes with roller bits. Sbor. trud. VNIITSVETMET no.4:82-93 '59. (MIRA 16:8)

(Boring)

Belash, N.

BRONSHTEYN, G., inzhener; KUSHNIR, M., inzhener; BELASH [illegible]

Sizing corn seeds. Muk.elev.prom. 23 no.9:24-25 S '57. (MIRA 10:11)

1. Krymskoye oblastnoye upravleniya khleboproduktov (for Bronshteyn, Kushnir). 2. Zamestitel' direktora po kachestvu Sukhovolyanskogo khlebopriyemnogo punkta Khmel'nitskoy oblasti (for Belash).
(Corn (Maize))

BELASH, N.F.

Effect of the speed of rotation of 167A-SE magnetic separator drums on the quality of the concentrate. Gor. zhur. no. 12: 75-76 D '65. (MIRA 18:12)

BELASH, P.M., dots.

Modeling variation problems. Trudy MNI no.7:21-33 '47
(MIRA 12:1)

(Calculus of variations)

BELASH, P.M., kandidat tekhnicheskikh nauk, dotsent.

[redacted]

Using electric grids of effective resistance to determine proper functions and numbers. Trudy MNI no.11:119-122 '51. (MLRA 10:3)

(Oil well logging, Electric)

BELASH, P.M., kandidat tekhnicheskikh nauk, dotsent.

Solving gas movement problems on the electric integrator. Trudy MNI
no.11:122-127 '51. (MIRA 10:3)
(Oil well logging, Electric--Electromechanical analogies)

BELASH, R.M., professor, doktor tekhnicheskikh nauk.

[redacted]

Extreme principles in calculating yields of incompleted wells.
Trudy MNI no.12:201-206 '53. (MLRA 9:8)
(Oilfields--Valuation)

Belash, P.M.

CHARNYY, I.A., professor, doktor tekhnicheskikh nauk; BELASH, P.M.,
professor, doktor tekhnicheskikh nauk.

Scale models of the problem of a non-newtonian liquid in
prismatic tubes. Trudy MNI no.13:124-129 '53. (MIRA 8:6)
(Hydrodynamics)

BELASH, P.M.; MAKSIMOV, M.I.

Effect of the time factor in the production of watered wells on the shape of the edge water line and oil and water recovery ratio. Trudy VNII no.10:221-239 '57. (MIRA 14:6)

(Oil fields—Production methods)

BELASH, P.M.

11(4) PHASE I BOOK EXPLOITATION SOV/2124

Mezhvuzovskoye soveshchaniye po voprosam novoy tekhniki v
neftyanoy promyshlennosti. Moscow, 1956

Razvedka i razrabotka neftyanykh i gazovykh mestorozhdeniy;
materialy soveshchaniya, tom. 1 (Prospecting and Development
of Oil and Gas Deposits; Papers of the Inter-Vuz Confer-
ence on New Techniques in the Petroleum Industry, Vol 1) Mos-
cow, Gostoptekhizdat, 1958. 311 p. Errata slip inserted.
1,500 copies printed.

Eds.: I. M. Murav'yev, Professor, Doctor of Technical Sciences,
and V. N. Dakhnov, Professor, Doctor of Geological and Min-
eralogical Sciences; Editorial Board: K. F. Zhigach, Professor
(Resp. Ed.), I. M. Murav'yev, Professor, A. A. Tikhomirov,
Candidate of Economical Sciences, V. I. Yegorov, Candidate
of Economical Sciences, M. M. Charygin, Professor, F. F.
Dunayev, Professor, N. I. Chernozhukov, Professor, Ye. M.
Kuzmak, Professor, I. A. Charnyy, Professor, G. M. Pan-
chenkov, Professor, V. N. Dakhnov, Professor, Doctor of
Geological and Mineralogical Sciences, N. S. Nametkin, Doctor
of Chemical Sciences, N. A. Almazov, Docent, V. N. Vinogradov,
Candidate of Technical Sciences, V. I. Biryukov, Candidate of
Technical Sciences, E. I. Tagiyev, and V. M. Gurevich;
Executive Ed.: N. P. Dobrynina; Tech. Ed.: E. A. Mukhina.

PURPOSE: The book is intended for engineers and scientific per-
sonnel working in the petroleum industry and vtuzes. It may
also serve as a textbook for advanced students of petroleum
vtuzes.

COVERAGE: The book contains articles written by staff members of
the Moscow, Groznyy, and Ufa Petroleum Institutes, the Kuybyshev
and Azerbaydzhan Industrial Institutes, the UfNII (Ufa Scien-
tific Research Institute), VNIIburneft' (All-Union Scientific
Research Institute of Oil Drilling), KBNP (Design Office of
Petroleum Instrument Making), the Bashneft Association (Bash-
kiriya Petroleum). These papers, read at the Mezhvuzy (Inter-
Vuz) Scientific Conference, deal with new techniques in the
petroleum industry introduced since 1956. Emphasis is given
to the importance of efficient drilling, geophysical prospecting,
working of oil and gas deposits, and the use of new devices
employed in oil and gas exploitation. There are 52 references:
44 Soviet, and 8 English.

Zhigach, K. F., L. K. Mukhin, V. N. Demishev, and N. N. Goncharov
[Moscow Petroleum Institute]. Petroleum-Base Drilling Fluids 92
The authors state that petroleum-base drilling fluids are be-
ing used to open productive horizons to maintain the pene-
tration rate at the bottom-hole zone, and to increase the well
output. The use of petroleum-base drilling fluids is particu-
lary efficient for opening formations with high permeability
and low pressure, where the absorption of a large amount of
mud by the productive formation may prove dangerous. Petro-
leum-base drilling fluids also prove useful in opening forma-
tions with low permeability, particularly where the formation
contains swelling clay. Petroleum-base drilling fluids produce
good results in drilling under complex geological conditions
and in drilling deep and directional wells.

(52)

Ryabinkin, L. A. (Moscow Petroleum Institute). Revision of the RNP Seismic Method and the Grouping Methods 159

The author describes the seismic RNP method recently developed at the Institute's seismic laboratory with the aid of the VNII (All-Union Research Institute) of Geophysics and passed on to the petroleum industry. He mentions the results obtained in field and laboratory testing while using a basic modification of the RNP method.

Abdullayev, R. A. (Azerbaydzhan Industrial Institute). Precise and Approximate Methods for Interpretation of Travel-Time Curves of Reflected Waves 178

The author records several approximate and precise analytical and graphic methods for determining effective speeds with the use of travel-time curves of reflected waves.

Datskevich, A. A. (KBMP - Design Office for Petroleum Instrument ~~Making)~~ Equipment of Automatic-Geophysical Field Stations 196

The author states that his KBMP office cooperates with the design offices of the Neftepribor (Petroleum Instrument), Geofizika (Geophysics), and the Mytishchinskiy Instrument-Making Plants in manufacturing the largest amount of new industrial geophysical equipment in the petroleum industry. Because of the large demand by the industry, the volume produced by the KBMP office was inadequate and production was doubled in 1957. The KBMP has an experimental plant, a model shop, and laboratories.

Dakhnov, V. N., and A. I. Kholin (Moscow Petroleum Institute). On the Problem of Quantitative Evaluation of Residual Oil Saturation of a Reservoir Carried Out by Radioactive Methods 209

The authors state that the determination of the type of liquid saturating the formation reservoir encased in the well presents one of the major problems for advancing the technology of petroleum exploration. Constant observation of the movements and changes in water-oil contact in all wells is essential, and the radiometric method, developed between 1953 and 1955 at Laboratory Nr 1 of the MNI (Moscow Petroleum Institute), which helps determine the type of liquid saturating the formation, answers the purpose.

Barsukov, O. A. (Moscow Petroleum Institute). Some Theoretical Problems on Neutron Methods for Separating Oil-bearing Formations From Water-bearing Formations 218

The author refers to the experiments conducted at the MNI and other organizations which contributed to the development of methods to separate oil-bearing from water-bearing formations; he describes several physical processes that take place during neutron study methods and presents pertinent evaluating calculations.

Charnyy, I. A. (Moscow Petroleum Institute). One of the Integral Equations of the Filtration Theory and Some of its Applications 230

The author gives a detailed description and graphic calculations of an integral equation of the filtration theory.

Belash, P. M. (Moscow Petroleum Institute). On Equations Used ~~for Determining~~ Yields 248

The author shows the connection between differential equations of filtration and the equations of yields.

Pykhachev, G. B. (Groznyy Petroleum Institute). Determining Pressure of an Oil-bearing Formation Having a Low Gas Saturation 257

The author reviews filtration in mixed liquid and gas phase formations and submits equations.

Bagdasarov, S. Kh. (Kuybyshev Industrial Institute). The Role and Significance of A Hydraulic Seal in Exploitation of Oil Deposits 266

The author is opposed to the exploitation of new deposits with dissolved gas in petroleum production under prevailing techniques during the initial period, particularly when it is intended to correct the condition by secondary methods. This system has been responsible for depleting many old petroleum deposits (Baku, Groznyy, Krasnodar, etc.).

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SOV/124-58-10-11332

Translation from: Referativnyy zhurnal, Mekhanika, 1958, Nr 10, p 91 (USSR)

AUTHOR: Belash, P.M.

TITLE: On Material-balance Equations (Ob uravneniyakh material'nogo balansa)

PERIODICAL: Materialy Mezhvuz. soveshchaniya po vopr. novoy tekhn. v neft. prom-sti, 1958, Vol 1, pp 248-256

ABSTRACT: The author examines the results of the application of material-balance equations to an isolated area of a reservoir with wells operating under elastic, gaseous, or dissolved-gas conditions. The ultimate separation of liquid and gas is depends on the mean pressure existing within the reservoir. The theoretical approach outlined above was employed earlier by B.B. Lapuk with regard to natural-gas deposits [Teoreticheskiye osnovy razrabotki mestorozhdeniy prirodnykh gazov (Theoretical Fundamentals of the Exploitation of Natural-gas Deposits), Gostoptekhizdat, 1948]. An example is given showing the calculation of the mean pressure in Bori-Su deposits (Malgobek rayon) of dissolved gas. Bibliography: 6 references.

Card 1/1

V.N. Nikolayevskiy

SOV/93-58-8-11/15

AUTHOR: Belash, P. M. Goflin, A. L., and Nikolayev, N. S.

TITLE: A Unique Electrical Integrator for Studying Oilfield Development Processes (Unikal'nyy elektrointegrator dlya issledovaniya protsessov razrabotki neftyanykh mestorozhdeniy)

PERIODICAL: Neftyanoye khozyaystvo, 1958, Nr 8, pp. 53-60 (USSR)

ABSTRACT: The article presents detailed data on the design and operation of the EI-S electrical integrator which is to be used in studying oilfield formations. The requirements of an electrical integrator have been established by the Neftyanoy institut imeni akademika I. M. Gubkina (Petroleum Institute imeni Academician I. M. Gubkin) on the basis of its long experience with electrical models. P. M. Belash, L. I. Biryukova, A. L. Goflin, Yu. V. Knigavko, E. S. Kozlov, M. I. Maksimov, B. A. Matkin, N. S. Nikolayev,

Card 1/3

P. V. Pekorin, A. P. Pekrovskiy, Ye. B. Rasskazov, and N. G. Sazonov of the Vsesoyuznyy nefte-gazovyy nauchno-issledovatel'skiy institut (All-Union Oil and Gas Scientific Research Institute), the konstruktorskoye byuro (Bureau of Design), and of the zavod schetno-analiticheskikh mashin (Calculating and Analyzing Machine Plant) took a leading part in the development, construction, and mastery of the EI-S integrator. The integrator consists of seven blocks interconnected by a special wiring system. Fig. 1 gives a general view of this unit and Fig. 2shows the scheme of the individual blocks. The principle of action of blocks 1 and 2 is based on Darcy's law of filtration and Ohm's law of electric conduction. These blocks contain up to 20,000 grid nodes capable of handling 60,000 numerical values of oilfield formation characteristics. The control and outlets of 750 channels (wells), assigned to the study of boundary conditions, are located in block 3. The electronic control and the PDV - programmnyy delitel' vremeni (program time divider) are located in block 4. One cell of the electronic control is shown in Fig. 3. Block 5 of the integrator is designed to transform the functions, and block 6 is assigned to the study of BNU - nachal'nyye usloviya (initial conditions). Block 7 contains the feed units, the transformers, rectifiers, and stabilizers. Isobar maps are produced during the study of the oilfield formations. Fig. 4 shows an isobar map based on field data obtained from the electrical integrator. Fig. 5 shows a pressure variation curve photographed by the electrical integrator. The authors conclude that the new electrical integrator will make it possible to solve the problems of developing large oilfields. There are 5 figures.

1. Petroleum industry--Development 2. Electronic integrators --Design 3. Electronic integrators--Performance

BELASH, P.M.

Graphic representation of flows in nonhomogeneous oil layers.
Trudy VNII 12:233-241 '58. (MIRA 12:3)
(Oil reservoir engineering)

BELASH, P.M.; GOFLIN, A.L.; NIKOLAYEV, N.S.

Special purpose electronic differential analyzer for studying processes of oil field development. Neft.khoz. 36 no.8:53-60 Ag '58. (MIRA 11:12)

(Electronic differential analyzers)

BELASH, P. M., KRYLOV, A. P., MAKSIMOV, M. I. (SECTION II)

"Electrical-Model Studies and Prediction of Oilfield Development."

Report to be submitted at the Fifth World Petroleum Congress, 30 May - 5 June 1959. New York.

KRYLOV, Aleksandr Petrovich; BELASH, Pavel Maksimovich; BORISOV, Yuriy Petrovich, kand. tekhn. nauk; BUCHIN, Aleksandr Nikolayevich; VOINOV, Viktor Viktorovich; GLOGOVSKIY, Mark Mikhaylovich; MAKSIMOV, Mikhail Ivanovich; NIKOLAYEVSKIY, Nikolay Matveyevich, doktor ekon. nauk; ROZENBERG, Maks Davidovich; SAVINA, Z.A., ved. red.; POLOSINA, A.S., tekhn. red.

[Programming the development of oil fields; principles and methods] Proektirovanie razrabotki neftianykh mestorozhdenii; printsipy i metody. Moskva, Gostoptekhizdat, 1962. 429 p. (MIRA 15:6)

1. Chlen-korrespondet Akademii nauk SSSR (for Krylov).
(Oil reservoir engineering)

BELASH, P.M.

Using electric models to determine the reservoir parameters from the data (test wells. "auch.-tekh.sbor.po dob.nefti. no. 14:59-64 '61. (MIRA 17:6)

BELASH, P.M.

Using electric models for studying the development of a layer in order to obtain additional data on its parameters. Nauch.-tekh. sbor. po dob. nefti no.15:69-72 '61. (MIRA 15:9)

1. Vsesoyuznyy neftegazovyy nauchno-issledovatel'skiy institut.
(Oil reservoir engineering)

BELASH, F.M.; KIRILICHEV, A.M.

Solution of nonsteady petroleum and gas flow problems in networks of ohmic resistances only. Izv. vys. ucheb. zav.; neft' i gaz. 6 no.5:87-90 '63 (MIRA 17:7)

1. Moskovskiy institut neftekhimicheskoy i gazovoy promyshlennosti imeni akademika I.M.Gubkina.

BELASH, P.M.; KIRILICHEV, A.M.

Certain problems in the designing of net integrators and methods for solving problems of nonsteady gas flow. Izv. vys. ucheb. zav.; neft' i gaz 6 no.7:83-89 '63. (MIRA 17:8)

1. Moskovskiy institut neftekhimicheskoy i gazovoy promyshlennosti imeni akademika I.M. Gubkina.

L 33539-65 EPA(s)-2/EWT(m)/EPF(c)/EWP(j)/T Pc-4/Pr-4/Pt-10 RM

55
54
B+

ACCESSION NR: AT5006931 S/2982/64/000/051/0048/0053

AUTHOR: Belash, P. M. (Professor); Paushkin, Ya. M.; Belov, V. F.; Vishnyakova, T. P.; Nechushkin, A. M.; Sokolinskaya, T. A.; Machus, F. F.

TITLE: The magnetic properties of ferrocene-containing polymers 1

SOURCE: Moscow. Institut neftekhimicheskoy i gazovoy promyshlennosti. Trudy, no. 51 51, 1364. Neftekhimiya, neftekhimicheskiye protsessy i neftepererabotka (Petroleum chemistry, petrochemical processes and oil refining), 48-53

TOPIC TAGS: ferrocene, polymer magnetic property, 15 electron paramagnetic resonance, bromonaphthalene polymer, dichlorobenzene polymer, acetylferrocene, hydroxylamine

ABSTRACT: The electron paramagnetic resonance, magnetic susceptibility and magnetization of ferrocene-containing polymers was determined. The study covered previously described polymers (Dokl. Akad. Nauk v. 149, no. 4, 1963) obtained by the tert.-butyl

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ACCESSION NR: AT5006931

hydrochloride (IV) or of acetylferrocene and hydroxylamine hydrochloride (V) in the presence of zinc chloride. The EPR spectra (see Fig. 1 of the Enclosure) show high intensity and width, ΔH, indicating the presence of strong internal fields. The magnetic susceptibility was measured by a published

ASSOCIATION: Institut neftekhimicheskoy i gazovoy promyshlennosti, Moscow (Petrochemical and gas industry institute)

SUBMITTED: 00 ENCL: 01 SUB CODE: OC, EM

NO REF SOV: 005 OTHER: 002

Card 2/3

L 33539-65

ACCESSION NR: AT5006931

ENCLOSURE: 01

0

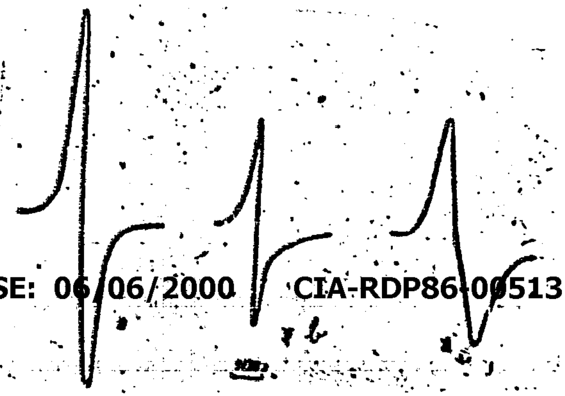

Fig. 1. EPR Spectra. a-polymer II; b-polymer IV; c-polymer V.

Card 3/3

NECHUSHKIN, A.M.; BELASH, P.M.; BELOV, V.F.; SARKISOV, A.L.

Semiconductor pressure gauges for gas mixtures. Izv. vys. ucheb. zav.; neft' i gaz 7 no.11:89-91 '64. (MIRA 18:11)

1. Moskovskiy institut neftekhimicheskoy i gazovoy promyshlennosti im. akademika I.M. Gubkina.

EWT(d)/EWT(1)/EPA(s)-2/EPF(c)/EEC(k)-2/EWG(m)/EWP(v)/EPA(w)-2/T/EWP(k)/
L 52997-65 EWT(d)/EWT(1)/EPA(s)-2/EPF(c)/EEC(k)-2/EWG(m)/EWP(v)/EPA(w)-2/T/EWP(k)/ Pz-6/Pf-4/Pr-4/Pt-7/Peb IJP(c) JHB/TT/WW/AT
EWP(h)/EPA(bb)-2/EWP(1)/EWA(h) S/

ACCESSION NR AM5005926 **BOOK EXPLOITATION**

69
8+1

Belash, Pavel Maksimovich (Professor; Doctor of Technical Sciences)

Principles of computer engineering (Osnovy vychislitel'noy tekhniki), Moscow, Izd-vo "Nedra", 1964, 329 p. illus., biblio. Errata slip inserted. 7,000 copies printed.

16 14

TOPIC TAGS: computer technology, digital computer, analog computer, automatic control system, Monte Carlo method, computer programming

PURPOSE AND COVERAGE: This book contains the basic premises on analog and grid modules and digital assemblies. The section on digital assemblies includes computers with programmed control, digital analyzers and control machines. Problems of converting analog codes and combining computer assemblies are examined. The section on the use of computers includes the solution of economic planning problems and the Monte Carlo method. The book is a textbook on the principles of computer technology and conforms to the syllabus of the course "Automation of Production Processes". It can be

14

TABLE OF CONTENTS (abridged):

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L 52997-65

ACCESSION NR AM5005926

0

Foreword — 3
Introduction — 5
Ch. I. Continuous action computer assemblies — 8
Ch. II. Assemblies for solution of boundary problems of equations in partial derivatives — 69
Ch. III. Digital computer assemblies — 115
Ch. IV. Elements of programming — 181
Ch. V. Specialized discrete action computer assemblies — 231

SUBMITTED: 15Sep64 SUB CODE: DP, MA, EE

NO REF SOV: 018 OTHER: 001

LL

Card 2/2

L 07117-67 EWT(d)/EWP(1) IJP(c) BB/GG

ACC NR: AT6017645 (A) SOURCE CODE: UR/2982/65/000/058/0095/0097

AUTHOR: Belash, P. M. (Professor); Kirilichev, A. M.; Kochetkov, G. M.

ORG: none

TITLE: Increasing the internal-storage capacity in the "Minsk-1" digital computer

16

45
44

B+1

SOURCE: Moscow. Institut neftekhimicheskoy i gazovoy promyshlennosti. Trudy, no. 58, 1965. Elektronika i vychislitel'naya tekhnika v neftyanoy, gazovoy i khimicheskoy promyshlennosti (Electronics and computer engineering in the petroleum, gas, and chemical industry), 95-97

computer storage

TOPIC TAGS: digital computer / Minsk 1 digital computer

ABSTRACT: Most of the problems in the petrochemical and gas industries handled by the MINKh and GP computing laboratory involved a very large volume of source data (hundreds to tens of thousands of numbers). The "Minsk-1" internal storage consisting of 1024 31-digit binary words proved inadequate. A second magnetic-

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L 07117-67

ACC NR: AT6017645

1

storage unit was installed in the computer which doubled its capacity. Technical details of this work are reported in this short article. "Senior Engineer V. G. Ronzhin and Senior Laboratory Worker B. A. Turkin took part in the work." Orig. art. has: 3 figures.

SUB CODE: 09 / SUBM DATE: none

Card 2/2

L 07121-67 EWT(d)/EWP(1) IJP(c) BB/GG/JXT(CZ)

ACC NR: AT6017644 (A) SOURCE CODE: UR/2982/65/000/058/0092/0094

AUTHOR: Belash, P. M.; (Professor); Kirilichev, A. M.; Kochetkov, G. M. 42 41

ORG: none *

TITLE: Modernization of "Minsk-1" 16C digital computer

B+1

SOURCE: * Moscow. Institut neftekhimicheskoy i gazovoy promyshlennosti. Trudy, no. 58, 1965. Elektronika i vychislitel'naya tekhnika v neftyanoy, gazovoy i khimicheskoy promyshlennosti (Electronics and computer engineering in the petroleum, gas, and chemical industry), 92-94

TOPIC TAGS: digital computer, Minsk 1 digital computer, computer programming,

ABSTRACT: The problems handled by the MINKh and GP computing laboratory involved a very wide range of initial data and intermediate and final results (petroleum and gas fields calculations). The instruction stop provided in the "Minsk-1" computer for the convenience of programing work did not meet all the requirements of this particular application. Hence, the computer circuits were

Card 1/2

L 07121-67

ACC NR: AT6017644

modified to provide for additional automatic stops at the moment of recording the current computation result in the internal storage. These four advantages are listed: (1) Easier location of programer's or puncher's mistakes; (2) Use of interpretive routine for transferring from the fixed-point to the floating-point arithmetic; (3) Easier control transfer to a different interpretive part of the program; (4) Checking the correctness of the problem solving course. "Senior Engineer V. G. Ronzhin and Laboratory Worker A. S. Fedorov took part in the work." Orig. art. has: 1 figure.

SUB CODE: 09 / SUBM DATE: none

Card 2/2

BELASH, P.N., doktor tekhn.nauk; PUGINA, O.V., inzh.; GETMANSKIY, I.K., inzh.

Use of nonsulfurated compounds for the flotation of iron ores. Masl.-zhir. prom. 27 no.7:32-34 Jl '61. (MIRA 14:7)

1. Krivorozhskiy gornorudnyy institut (for Belash, Pugina).
2. Nauchno-issledovatel'skiy institut sinteticheskikh zhirozameniteley i moyushchikh sredstv (for Getmanskiy).
(Iron ores)
(Flotation)

BELASH, T. I.

DECEASED

1963/4

AGRICULTURE

(1961)

PERIODICALS

BELASH, V.A.

Interpretation of observation results on vertical and subvertical layers by the method of induced polarization. Geol. i geofiz. no.7:41-54 '64. (MIRA 18:8)

1. Altayskaya geofizicheskaya ekspeditsiya, selo Mayma.

BELASH, V.A.

Interpretation of observation results by the method of induced polarization. Geol.i geofiz. no.7:90-95 '61. (MIRA 14:9)

1. TSentral'naya geofizicheskaya ekspeditsiya Zapadno-Sibirskogo geologicheskogo upravleniya, Stalinsk.
(Electric prospecting)

KOVALEVA, A.F., kand. tekhn. nauk; BELASHA, A.S.

Hydraulic mine filling in France and India. Met. i gornorud. prom. no.4:87-88 Jl-Ag '65. (MIRA 18:10)

BELASHA, M.

RUMANIA/Cultivated Plants - Potatoes. Vegetables. Melons. etc. M.

Abs Jour : Ref Zhur - Biol., No 4, 1958, 15646

Author : M. Belasha

Inst : The Agronomical Institute "Nikolaye Belchesku" in Bucharest.

Title : Winter Onion Sowing. (Podzimniy posev luka).

Orig Pub : Granina, via si livada, 1956, 5, No 12, 10-14.

Abstract : Experiments at the Agronomical Institute "Nikolaye Belchesku" (Bucharest) in 1953-1955 have shown that when onion seeds were sown in the fall on fields, good quality topped onions may be obtained. The tests were made on 6 onion varieties. The best results were gotten onlightly structured soils. Similar findings were obtained at the Lovrin Experimental Station.

Card 1/1

BELASHCHENKO, D.K.

Category : USSR/Atomic and Molecular Physics - Heat

D-4

Abs Jour : Ref Zhur - Fizika, No 1, 1957, No 873

Author : Lyubimov, A.P., Belashchenko, D.K.

Title : Radiation-Colorimetric Method of Determining the Specific Heat of Metals.

Orig Pub : Sb. Mosk. in-ta stali, 1955, 33, 3-11

Abstract : Description of a new method for determining the specific heat C_p of metals, based on simultaneous measurement of the temperature T of the cooling specimen and of the quantity of heat Q, delivered by the specimen to the surrounding medium. The specific heat was calculated from the equation $C_p = Q/(mdT/dt)$, where m is the mass of the specimen, and t the time. The specimen is placed inside a double-wall quartz cover and is first heated in vacuum by high frequency current. The heat radiated by the specimen is absorbed by cooling water flowing between the walls of the cover, and is determined from the temperature difference of the cooling water ahead and past the cover. The values of C_p were determined for Fe-C, Fe-Cu and Armco-iron alloys at 250--950°. Another version of the method, in which the metal is heated by a heater placed inside the specimen, is described. In the latter version the specific heat can be measured both while heating and while cooling. The

Card : 1/2

Category : USSR/Atomic and Molecular Physics - Heat

D-4

Abs Jour : Ref Zhur - Fizika, No 1, 1957 No 873

accuracy of the method increases with increasing temperature; the error amounts to less than 3% above 600°.

{Chair of Physics} Lyubimov, A.P.
{Prof., Dr. Tech. Sci.}

Belaschenko, D.K. (Inzhener)

Card : 2/2

BELASHCHENKO, D.K.

SOV/137-58-8-17648D

Translation from: Referativnyy zhurnal, Metallurgiya, 1958, Nr 8, p 207 (USSR)

AUTHOR: Belashchenko, D. K.

TITLE: Effect of Certain Structural Features of Liquid Metallic Alloys on their Viscosity and Electric Properties (Vliyaniye nekotorykh strukturnykh osobennostey zhidkikh metallicheskikh splavov na ikh vyazkiye i elektricheskiye svoystva)

ABSTRACT: Bibliographic entry on the author's dissertation for the degree of Candidate of Technical Sciences, presented to the Mosk. in-t stali (Moscow Steel Institute), Moscow, 1957

ASSOCIATION: Mosk. in-t stali (Moscow Steel Institute), Moscow
Ref. RZhMet, 1958, Nr 5, abstract 10402

1. Liquid metals—Viscosity 2. Liquid metals—Electrical properties 3. Liquid metals—Physical properties

Card 1/1

BELASHCHENKO, D.K.

76-10-14/34

AUTHOR: Belashchenko, D.K.

TITLE: The Viscous and Electrical Properties of Liquid Binary Alloys and Their Relation to the Structure of the Liquid (Vyazkiye i elektricheskiye svoystva zhidkikh binarnykh splavov i ikh svyaz' so strukturoy zhidkosti)

PERIODICAL: Zhurnal Fizicheskoy Khimii, 1957, Vol. 31, Nr 10, pp. 2269-2277 (USSR)

ABSTRACT: It is tried to measure some properties of liquid alloys of the binary system series and to determine on the strength of the obtained data the most probable characteristics of the adjacent order of magnitude in the corresponding liquids. The cinematic viscosity and the specific electric resistance were chosen as structure-sensitive-liquid-properties. The hysteresis of the viscosity and of the eletric resistance was detected in the liquid alloys of the Cd-Sb-, Pb-Tl- and Bi-Tl-systems. A hysteresis of the mentioned properties was not found in the alloys of the Sb-Sn- and Cd-Cu-systems. A considerable influence of the correlation on the properties of the investigated systems was detected. The tendency to the occurrence of anomalies was found

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76-10-14/34

The Viscous and Electrical Properties of Liquid Binary Alloys and Their Relation to the Structure of the Liquid

with the deviations of the alloys from the ideal state (in the present case in the following order: Pb-Tl → Sb-Sn → Fe-Ni → Bi-Tl → Cd-Sb → Cd-Cu) It is shown that at the moment it is difficult to find a more distinct relation between the kinetic and the thermodynamic properties of liquid alloys. There are 8 figures and 4 Slavic references.

ASSOCIATION: Moscow Institute for Steel imeni I.V. Stalin (Moskovskiy institut stali imeni I.V. Stalina)

SUBMITTED: July 18, 1956

AVAILABLE: Library of Congress

Card 2/2

BELASHCHENKO, D.K.

AUTHOR: Belashchenko, D. K. 20-1-26/42

TITLE: On the Structural Peculiarities of the Liquid Alloys of Some Binary Systems (O strukturnykh osobennostyakh zhidkikh splavov nekotorykh dvoynykh sistem)

PERIODICAL: Doklady AN SSSR, 1957, Vol. 117, Nr 1, pp. 98-101 (USSR)

ABSTRACT: The present paper measures and compares various physical properties of the liquid alloys of some binary systems and determines the most probable characteristic features of the near order in the respective liquids. The author here sets up several rules concerning the influence of the concentration of the electrons on the properties of liquid alloys, the connection between their kinetic and thermodynamic properties, and on the relations of the structures of the alloys in the liquid and in the solid state. As "structure-sensitive" properties of the liquid, viscosity and electric resistance were chosen. The scheme of the device for measuring these properties is shown in form of a drawing. The author investigated spectrally pure tin, antimony with vestiges of iron, cadmium with vestiges of copper, spectrally pure lead, thallium with vestiges of copper and

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silver, bismuth with vestiges of copper, electrolytic copper, electrolytic iron, and electrolytic nickel. All experiments were carried out in a hydrogen atmosphere.
A diagram illustrates the diagrams of kinematic viscosity ν and of the electric resistance ϱ' as functions of the concentrations of the liquid solutions of the Cd-Sb system. The position and the behavior of the maxima of these curves is discussed. These results tend to indicate the following: After the melting of the alloys which are similar to CdSb, a packing of atoms which is similar to the structure of the compound CdSb is conserved in the liquid alloy. The state of the Cd-Sb alloys when cooled differs from their state in the case of previous heating. Also in the liquid alloys of the system Pb-Tl and Bi-Tl hysteresis phenomena are found. In some cases states of the liquid are probably possible which are metastable with respect to the other states of the given liquid (and are stable for a longer or shorter time. The viscosity and the electric resistance of the liquid alloys of the system Cd-Cu depend monotonously on concentration. In the systems Pb-Tl, Bi-Tl and Cd-Sb the shape of the isotherms of

On the Structural Peculiarities of the Liquid Alloys of Some Binary Systems 20-1-26/42

viscosity reminds one of the shape of the curves at the beginning of solidification.
There are 4 figures, and 3 references, all of which are Slavic.

ASSOCIATION: Moscow Institute for Steel imeni I. V. Stalin (Moskovskiy institut stali im. I. V. Stalina)

PRESENTED: April 25, 1957, by G. V. Kurdyumov, Academician

SUBMITTED: April 25, 1957

AVAILABLE: Library of Congress

Card 3/3

AUTHOR: Belashchenko, D. K. 76-32-4-15/43

TITLE: The Viscosity and Electric Resistance of Liquid Alloys of the Cadmium-Copper System (Vyazkost' i elektricheskoye soprotivleniye zhidkikh splavov sistemy kadmiy - med')

PERIODICAL: Zhurnal Fizicheskoy Khimii, 1958, Vol. 32, Nr 4, pp. 825 - 830 (USSR)

ABSTRACT: In the previous paper the connection between the viscosity - and the electrical properties in Cd - Sb alloys was already observed; this is characteristic for systems with an intermetallic binding of the components. Experimental data in this field are very rare and a comparison of the various properties of the investigated alloys was not carried out. The present paper investigates the above mentioned system using the experimental technique and the apparatus of the previous paper; the concentrations of from 0 to 55 atom percent of copper were used in 5 alloys. The obtained results of measurement of the kinematic viscosity and of the angle of rotation in the rotating magnetic field as well as the calculated specific resistance are mentioned on a table, while the isothermal

Card 1/3

76-32-4-15/43

The Viscosity and Electric Resistance of Liquid Alloys of the Cadmium-Copper System

lines of the kinematic viscosity and of the specific resistance of the liquid alloys as well as the function of the jump of electric conductivity in the crystallization on the composition are graphically represented. It was observed that the logarithm of the viscosity is a linear function of the reciprocal value of absolute temperature; from this the activation energy was calculated and graphically represented. The monotonous character of the changes of the properties of alloys according to the composition is interrupted within the concentration range of from 30-40 atom percent of copper in correspondance with the electron compound Cd_8Cu_5 (δ -phase). The system Cd-Cu is a typical example for the abnormal properties of the alloys with electron compounds, and it is assumed that the structure of γ-brass which is present in the δ -phase of the system, is slightly destroyed in melting; this is pointed out by the increase of the resistance in the case of a temperature change, and it is proved in the determinations of the activation

Card 2/3

76-32-4-15/43

The Viscosity and Electric Resistance of Liquid Alloys of the Cadmium-Copper System

energy. Additionally the changes of free energy were investigated by means of an equation by Eyring (Reference 13). There are 4 figures, 3 tables and 13 references, 5 of which are Soviet.

ASSOCIATION: Moskovskiy institut stali im. I. V. Stalina (Moscow Institute for Steel imeni I. V. Stalin)

SUBMITTED: December 19, 1956

AVAILABLE: Library of Congress

1. Cadmium-copper alloys(Liquid)--Properties 2. Cadmium-copper alloys(Liquid)--Resistance

Card 3/3

SOV/137-58-11-21978

Translation from: Referativnyy zhurnal, Metallurgiya, 1958, Nr 11, p 21 (USSR)

AUTHORS: Belashchenko, D. K., Lyubimov, A. P.

TITLE: The Viscosity and Electrical Properties of Molten Alloys of Certain Binary Systems (Vyazkost' i elektricheskiye svoystva zhidkikh splavov nekotorykh dvoynykh sistem)

PERIODICAL: Sb. Mosk. in-ta stali, 1958, Vol 38, pp 135-172

ABSTRACT: A method of joint measurement of the viscosity, ν, and the electrical conductivity, χ, of liquid melts of metals at up to 1700°C is developed. The properties of molten Sn, Pb, Ti, Cd, Fe, and Ni, and of systems having intermetallic compounds with various types of bonds, supercooling on crystallization, are investigated: Sb-Sn, Cd-Sb, Cd-Cu, Bi-Tl, Pb-Tl, and Fe-Ni. A relationship between the thermodynamic and the kinetic properties is found upon comparison thereof. A tendency toward weakening of the ordered distribution of atoms is found in equi-atomic molten alloys of the Sb-Sn, Pb-Tl, and Bi-Tl systems, resulting in the appearance of coinciding maxima and minima on the ν and χ isotherms. When either of the components in these alloys predominated, a tendency to ordering

Card 1/2

SOV/137-58-11-21978

The Viscosity and Electrical Properties of Molten Alloys (cont.)

of the structure was observed. This is expressed in a corresponding change in ν and χ. The structure of melts of the Cd-Sb and Cd-Cu systems is further removed from the ideal. The presence therein of a specific placement of particles in a manner corresponding to CdSb or Cd_3Sb_2 (in the case of Cd-Sb) or the electronic compound Cd_8Cu_5 (in the case of Cd-Cu) is hypothesized. The latter is used as an example for illustrating the determining influence of electron concentration upon χ properties. In the Cd-Sb, Bi-Tl, and Pb-Tl systems, a ν and χ hysteresis is found. This is explained by the assumed supercooling of melts of these systems upon crystallization of melts. It is shown that ν and χ are "structure-sensitive" properties of molten Me and alloys, a fact that is particularly valuable for studying their internal structures at high temperatures, when X-ray diffraction analysis encounters significant experimental difficulties. Bibliography: 19 references.

A. R.

Card 2/2

S/180/60/000/006/017/030
E201/E391

AUTHOR: Belashchenko, D.K. (Moscow)

TITLE: Kinetic Properties of Liquid Metal Alloys

PERIODICAL: Izvestiya Akademii nauk SSSR, Otdeleniye tekhnicheskikh nauk, Metallurgiya i toplivo, 1960, No. 6, pp. 89 - 93

TEXT: The author reviews briefly interactions in molten alloys manifested in the form of maxima or minima when a structure-sensitive property (viscosity, electrical conductivity, magnetic susceptibility, etc.) is plotted against composition. Discussing Danilov's idea of microscopic inhomogeneities in eutectic liquids, the present author points out that Danilov had in mind regions of the size of the nearest coordination sphere. In later models (Ref. 3) these inhomogeneities were extended to include many thousands of atoms. Formation of such large inhomogeneities is accompanied by a decrease of entropy and an increase of the interphase free energy, i.e. it contradicts thermodynamic ideas on energetically favoured states. The present author consequently regards "layering"

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S/180/60/000/006/017/030
E201/E391

Kinetic Properties of Liquid Metal Alloys

or "emulsification" of eutectic systems as an unconfirmed hypothesis. The author discusses also the relationship between viscous-flow activation energy and composition: Figs. 1 and 2 illustrate the case of Bi-Sn, Cu-Ag, Au-Sn, Cu-Sn, Ag-Sn, Hg-K, Cd-Cu molten alloys. The paper ends with a brief account of electrical diffusion (diffusion in electric fields) in liquid alloys and determination of ionic charges (some calculated effective charges are listed in the table on p. 92). There are 2 figures, 1 table and 14 references: 4 Soviet and 10 non-Soviet.

SUBMITTED: August 26, 1960

Card 2/2

86701

24.7700 1043,1143,1559 S/180/60/000/006/019/030
E111/E335

AUTHORS: Belashchenko, D.K., Bokshteyn, B.S. and Zhukhovitskiy, A.A. (Moscow)

TITLE: Electrodiffusion Potential in Metals

PERIODICAL: Izvestiya Akademii nauk SSSR, Otdeleniye tekhnicheskikh nauk, Metallurgiya i toplivo, 1960, No. 6, pp. 109 - 111

TEXT: The authors briefly discuss differences between movement of components in alloys and electrolytes under the influence of a direct current. In a report on work carried out at the Moskovskiy institut stali (Moscow Steel Institute), Belashchenko and Zhukhovitskiy previously formulated the existence of a diffusion potential in a binary alloy. The object of the present work is the experimental verification of the existence of a diffusion gradient of potential in metals. To obtain a reasonably large value of the gradient, it was decided to use liquid metals. The system Pb-Sn at 350 - 450 °C was chosen. To measure the potential difference, a specimen (a vertical capillary with the two liquid metals)

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S/180/60/000/006/019/030
E111/E335

Electrodiffusion Potentials in Metals

was connected in series with other specimens and a galvanometer of 14.3 ohm internal resistance and 30×10^{-9} A/division maximum sensitivity. Convection was not a significant factor in the experiments. Fig. 2 shows the diffusional potential difference, $\Delta\varphi \cdot 10^{-6}$ V, as a function of time, τ hrs (zero time corresponds to attainment of desired temperature) at 375 °C. The initial value of 5.0 ± 1.5 μV (the lead being more positive) stays constant for some hours and then decreases to zero (the step on the isotherm shown is not significant); it agrees in order of magnitude with that theoretically expected. Values for the diffusion coefficient and activation energy found from results of these experiments agree with published values (Ref. 1). Care was taken to prevent interference by thermoelectric e.m.f., whether due to furnace conditions or differences in mutual heats of solution and absence of these was verified. The authors point out the suitability of the investigated effect for

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86701

S/180/60/000/006/019/030
E111/E335

Electrodiffusion Potentials in Metals

determination of molecular characteristics, such as effective charge and mobility of metal ions. They recommend its investigation on systems where higher values are to be expected, e.g. semiconductors.
There are 2 figures and 2 Soviet references.

X

SUBMITTED: August 26, 1960
Card 3/3

80664

5.2610
5.4600

S/153/60/003/02/12/034
B011/B003

AUTHOR: Belashchenko, D. K.

TITLE: Electric Transfer in Liquid Systems 18 Bismuth 27 - Tin 27

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy. Khimiya i khimicheskaya tekhnologiya, 1960, Vol. 3, No. 2, pp. 285-287

TEXT: The calculation theory of electric transfer usually applied (Refs. 1-3) is valid for diluted solutions only. In collaboration with A. A. Zhukhovitskiy the author solved the problem of the transfer of components of a binary alloy at an arbitrary concentration of the solution. For this purpose the method of the dynamics of irreversible processes was made use of. For reasons of comparison with the results by K. E. Schwarz (Ref. 1) the author offers the formula for the transference number U_1 of the dissolved substance at equal partial volumes of the components. The formula by Schwarz and that by the

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author differ in the factor $\frac{\gamma_1 \quad C_2}{da_1/dC_1}$ which is equal to unity only in an infinitely diluted solution. The difference of the effective charge e^* from the "true" charge e is based on the consideration of the scattering of the conduction electrons on the ions (electron stream). This scattering is bound to lead to a shift of the ions in the direction of the electron motion (to the anode) (Refs. 6,7). In order to investigate the ion charges in liquid systems the author determined the steady distribution of the concentration in one sample through which direct current is directed (Equation (3)). By means of (3) the field tension E is described. Taking equation (4) into account equation (3) becomes: $E = \frac{1}{e_1^*} \cdot \frac{d\mu_1}{dx}$ (5), where μ_1 denotes the chemical potential of the first component, x the coordinate of the length of the sample, and e_1^* the effective ion charge. With the aid of the above method the author investigated liquid alloys of the

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system bismuth - tin at 300°. For this purpose capillaries 40 mm in length and 1 mm in diameter were used in the vertical position. Amperage was 1.5. In order to suppress convection a corresponding temperature gradient was created in the furnace. The direction of the current was chosen in such a way that the light component moved upwards. Sn^{113} was introduced into the alloy employed for analytical purposes. After 15 days the samples were taken from the capillaries and divided. The concentration was determined on the ends of the samples from the specific intensity of γ-radiation. The values $z = \frac{v_2 e_1^* - v_1 e_2^*}{V_{mol}}$ (where v_1 and v_2 are the molar partial volumes of the components and e_2^* the effective ion charge) for the alloys of the system bismuth - tin at 300° are shown in Fig. p. 286 and were obtained by equation (3). As may be seen from the figure, an inversion of the direction of the electric transfer at ~65 at % is brought about in alloys. The author looks upon the explanation of this inversion phenomenon as one of the current problems in the theory of

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metals. Mention is made of S. I. Drakin. The article under review was read at the 1. Meshvuzovskaya konferentsiya po radiokhimii (Inter-university Conference of Radiochemistry) in Moscow, April 20 - 25, 1959. There are 1 figure and 7 references, 3 of which are Soviet.

ASSOCIATION: Moskovskiy institut stali im. I. V. Stalina; Kafedra fizicheskoy khimii (Moscow Institute of Steel imeni I. V. Stalin; Chair of Physical Chemistry)

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AUTHOR: Belashohenko, D. K.

TITLE: The Theory of the Effect of Impurities on Self-diffusion 18

PERIODICAL: Zhurnal fizicheskoy khimii, 1960, Vol 34, Nr 1, pp 83-85 (USSR)

ABSTRACT: In this article, an approximate solution of the problem of the effect of dissolved impurities upon the self-diffusion coefficient was obtained for the case in which the atoms of the impurity bring about a strong disturbance in their neighborhood. The formula for the true self-diffusion coefficient D reads:

$$\frac{D - D_o}{D_o} = 3\rho \frac{D_1 - D_o}{D_1 + 2D_o} + \rho \frac{(D_1 - D_o)^2}{D_o(D_1 + 2D_o)} e^{-\gamma D_1/D_{imp}} \quad (5).$$

D denotes the true self-diffusion coefficient, D_o and D_1 the self-diffusion coefficients in a pure solvent and in a disturbed region, ρ the volume portion of the disturbed regions, and D_{imp} the diffusion coefficient of the impurity. In this case it holds that $\gamma \approx 0.3 - 0.5$. The author further studied the case in which the atoms of the solvent are influenced by the impurity in the transition. Formula (7) was derived:

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$D = D_p N_p$, where N_p is the molar concentration of the impurity. According to formula (5), the activation energy of self-diffusion at low temperatures must tend toward the activation energy of the disturbed region, and according to formula (7), toward the activation energy of diffusion. This indicates that the mechanism of the action of impurities can be explained only with the aid of experiments. There are 10 references, 2 of which are Soviet.

ASSOCIATION: Moskovskiy institut stali im. I. V. Stalina (Moscow Steel Institute imeni I. V. Stalin)

SUBMITTED: March 28, 1958

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S/148/61/000/011/008/018
E193/E383

AUTHORS: Belashchenko, D.K. and Grigor'yev, G.A.

TITLE: A study of electric transport of impurities in molten metals

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Chernaya metallurgiya, no. 11, 1961, 116 - 121

TEXT: In the first stage of the present investigation, the possible effect of surface diffusion on the results of experiments on electric-transport phenomena in molten metals contained in capillaries was studied. To this end, the diffusion of radioactive $Sn^{113-123}$ in molten tin contained in molybdenum glass capillaries of various diameters (0.69 - 2.09 mm) was investigated. To avoid the possible effects of convection the capillaries were held at 350 °C in a vertical furnace with its temperature gradient adjusted in such a manner that the temperature of the upper end of the capillary was 10 - 12 °C higher than that of its lower end. Since it was found that the diffusion coefficient was independent of the capillary diameter

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(and, consequently, of the surface/volume ratio), it was concluded that under the experimental conditions employed surface diffusion was either entirely absent or so small that it could not affect the process of electric transport. The electric-transport phenomena themselves were studied under similar conditions, except that the capillaries were provided with two molybdenum leads for electrical connections. The specimens were held at 350 °C with a DC passing through the molten metal until a steady state was obtained. They were then oil-quenched and, after breaking the capillary tube, the metal rods were divided into 2-mm long portions, whose radioactivity was determined with the aid of a γ-radiation counter. It was found that the process of electric transport under steady conditions could be described by:

$$\frac{d \ln a}{dx} = \frac{eZ^{\varkappa}E}{kT} \qquad (2)$$

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